

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of

Applicant : Powell, et al.
Application No. : 10/039,517
Filed : January 3, 2002
Title : SYSTEM AND DEVICE INCLUDING BARRIER LAYER
Docket : MIO 0059 V2
Examiner : D. Le
Art Unit : 2818

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Sir:

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RESPONSE TO SPECIES ELECTION

This paper is being filed in response to the Office Action mailed on December 16, 2002.
In that Action, the Examiner has required applicants to elect a single disclosed species
from the following:

- a) Species I, e.g. claims 30, 48: Capacitor device with nitride silicon-containing barrier layer.
- b) Species II, e.g. claim 31: Computer system. See Fig. 5.
- ✓ c) Species III, e.g. claims 32-39, 40, 41 and 42: Device with a silicon-containing barrier.
- d) Species IV, e.g. claims 43-47: A semiconductor device with transistor structure having a silicon-containing barrier layer.
- e) Species V, e.g. claim 49: A semiconductor device having a silicon-containing barrier layer containing no metal forming from silicon source.

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- f) Species VI, e.g. claim 50: A semiconductor device having a silicon-containing barrier layer containing no metal forming from silazane source.
- g) Species VII, e.g. claim 51: A semiconductor device with transistor structure having a barrier layer containing no metal.
- h) Species VIII, e.g. claim 52: A capacitor device with barrier layer containing no metal using rapid thermal nitridation with a nitridizing reactant.
- i) Species IX, e.g. claims 53-60: Capacitor device with nitride silicon-containing barrier layer from silicon source.
- j) Species X, e.g. claims 61-64: A device having a precursor layer with a metal-free silicon-containing material formed over at least a portion of first semiconductor device.
- k) Species XI, e.g. claim 65: A device having a precursor layer with a metal-free silicon-containing material formed over at least a portion of silicon substrate.
- l) Species XII, e.g. claim 66: A semiconductor device a precursor layer metal-free silicon-containing material forming from silicon source.
- m) Species XIII, e.g. claim 67: A semiconductor device having a precursor layer metal-free silicon-containing material forming from silazane source.
- n) Species XIV, e.g. claims 68-71: A semiconductor device with transistor structure having a metal-free containing precursor layer.
- o) Species XV, e.g. claims 72-73: A capacitor having a precursor layer forming over an electrode from a metal-free silicon-containing material from a silazane source.

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- p) Species XVI, e.g. claim 74: A capacitor having a precursor layer forming over an electrode from a metal-free silicon-containing material from a silane source.

Applicants hereby elect to have the claims of Species III examined on the merits. The Examiner advised that applicant must include a list of all claims readable thereon. Applicants submit that, based on the Examiner's own definition, claims 30-60 are readable thereon. Claims 30-60 all recite devices that include a silicon containing barrier. This election is made WITH TRAVERSE.

The Examiner has improperly presented a blanket restriction with no explanation or the reasons therefore. According to 35 U.S.C. §121, when a requirement for restriction is made, an Examiner must state the reasons why the inventions as claimed are independent and distinct.

According to the MPEP §816:

"[t]he particular reasons relied on by the examiner for holding that the inventions as claimed are either independent or distinct should be concisely stated. A mere statement of conclusion is inadequate. The reasons upon which the conclusion is based should be given."

In the Office Action, the Examiner identifies no less than sixteen (16) species that applicants are required to elect among. However, the Examiner provided no basis or reasons whatsoever for holding that the inventions as claimed are distinct. The applicants believe the grouping of the sixteen different species to be illogical and noncompliant with the guidelines of the M.P.E.P. As such, without the benefit of the Examiner's explanations as to the basis for the sixteen different species, applicants find it difficult to be responsive hereto.

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Applicants are not asserting that the claims are obvious variants of one another. Rather, the applicants are asserting that a proper response to the restriction requirement cannot be framed because applicants do not have the benefit of the Examiner's reasons as is required by the M.P.E.P. §806. Accordingly, the applicants believe that the restriction is improper and request that the Examiner withdraw the restriction.

For example, according to the M.P.E.P. §806.04(f), claims to be restricted to different species must be mutually exclusive. Moreover, claims to be restricted to different species *must recite the mutually exclusive characteristics* of such species. In the Office Action, the examiner provided no discussion whatsoever as to the basis for finding each of the sixteen species mutually exclusive. Further, numerous species are clearly not mutually exclusive. For example, claim 30 of species 1, claim 31 of species 2, and claim 32 of species 3 are clearly not mutually exclusive. Likewise, claim 43 of species 4, claim 51 of species 7 and claim 53 of species 9 are clearly not mutually exclusive. Still further, claim 30 of species 1 is not mutually exclusive to claim 43 of species 3. The above is intended to be merely exemplary and nonexhaustive.

Furthermore, according to the MPEP §806.03, restriction is not proper where the claims are but different definitions of the same disclosed subject matter, varying in breadth or scope of definition. Numerous of the identified species are related to the same disclosed subject matter. For example, claims 30 and 32 may define the invention at a different breadth, however, the invention defined in claim 30 is still confined to the definition of claim 32. A claim can include more than one of the disclosed embodiment within the breadth and scope of definition.

The Examiner further asserts that no claim is generic. Applicants respectfully traverse the Examiner's assessment of the claims based upon the amendments and remarks herein. For example, applicants believe claim 32 to be generic.

Applicants submit that the requirement is improper as it equates claims to species. This practice is impermissible according to MPEP 806.04(e) which clearly states that

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species are not claims. Species are specific embodiments of an invention. For example, in the present application, Fig. 1 illustrates a semiconductor device while Fig. 5 shows a computer system. Claims, on the other hand, are definitions of inventions. It appears that the Examiner has required applicants to elect specific claims rather than species when looking at the grouping of the Species. The Examiner has stated that Species I is drawn to claim 30 and used the preamble for a description of the Species. The Examiner proceeds to do this for each independent claim having a slightly different preamble. This is not in compliance with the MPEP.

The claims in the present application are presented in a form that is analogous to combination/subcombination product claims. In order to justify restriction of the species, the Examiner must demonstrate that the combination claims are patentable without the claimed subcombination. The Examiner has not shown this to be true, therefore, the election requirement is improper.

Proposed Restriction:

While applicants strongly believe that all of the pending claims should be examined under one application, in the spirit of cooperation with the Examiner, applicants suggest the following:

Arguably, there are two species presented in this application. A first species is drawn to a device having a silicon-containing material reacted with a reactive agent. Applicants believe at least claims 30-60 would read upon such a species.

A second species is drawn to a device having a precursor layer comprising a metal-free silicon containing material. Applicants believe that at least claims 61-74 would read upon such a species.

Applicants further believe that at least claim 32 is generic to both the proposed first and second species.

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If the Examiner would agree to such a restriction, applicants would select species 1 and elect claims 30-60 for initial prosecution on the merits.

CONCLUSION

Applicants respectfully submit that for the above reasons, the restriction requirement is improper and applicants request the Examiner withdraw the restriction. If the Examiner should consider withdrawing the current restriction requirement and issuing the proposed requirement as set out above, applicants would select the applicants defined species 1 and elect claims 30-60 for initial prosecution. If the Examiner would do neither of the above, applicants select species 3 and elect claims 32-42 for initial prosecution.

A drawing objection remains outstanding. Applicants previously filed proposed corrections to the drawings to address the objection. The Examiner is requested to indicate his approval of the proposed changes in his next communication.

Further, applicants submit that the pending claims including the claims herein represent allowable subject matter. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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Date: March 11, 2003

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